

# ***Rear-End Collision Warning System Field Operational Test - Status Report***

***July 18, 2002***

**Presented by:**

***Jack J. Ference***

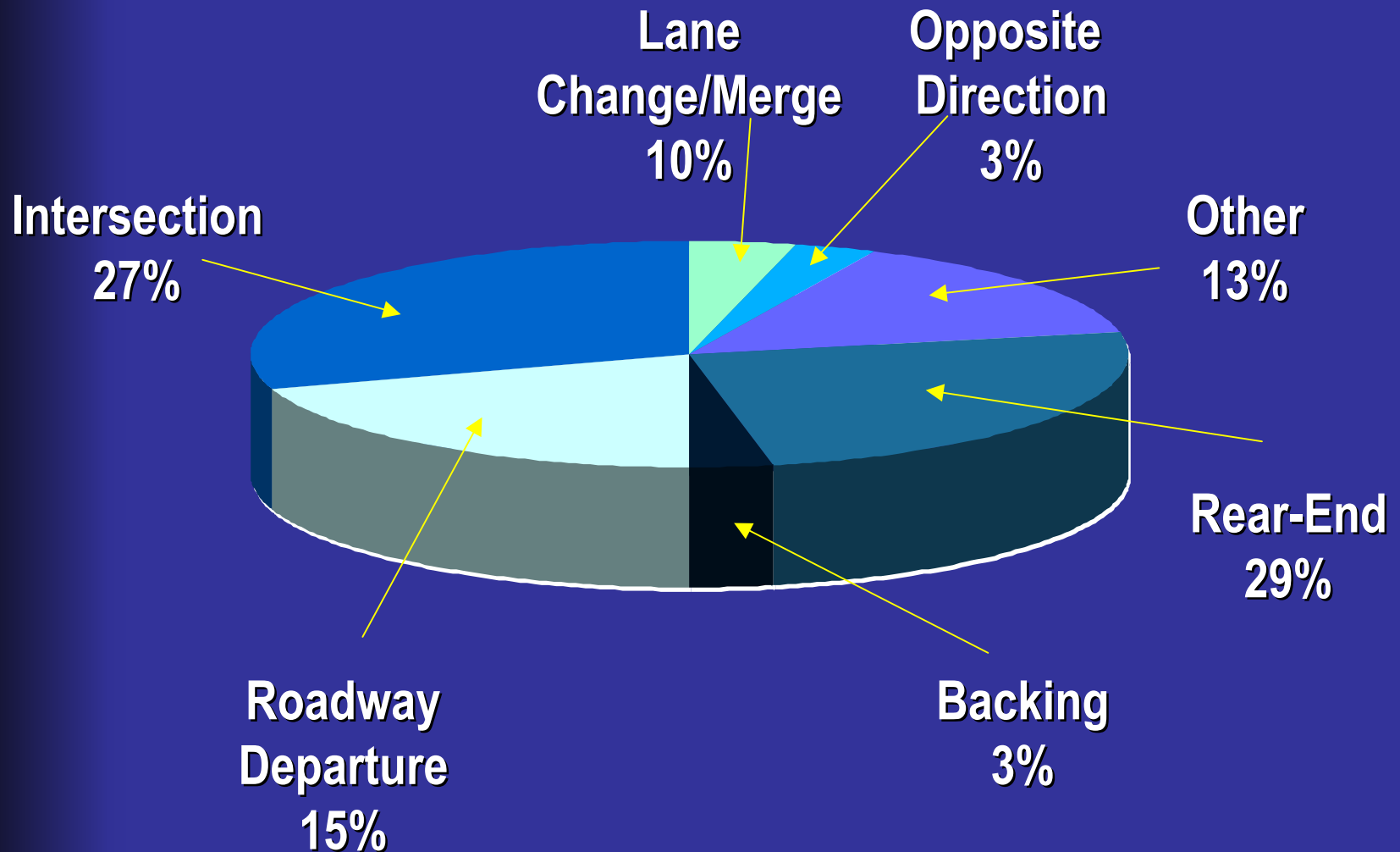
**Division of Advanced Safety Systems Research/Intelligent Vehicle Initiative**

**Office of Vehicle Safety Research NHTSA**

# ***Presentation Outline***

- **Background Information**
- **Program Goals and Overview**
- **Past Accomplishments**
- **Current Status and Next Steps**
- **Contact and Report Information**

# ***The Crash Problem***



# ***Background Information***

- **Current effort is a follow-on to prior project with GM and Delphi-Delco Electronics (DARPA 1/95-10/97)**
- **Earlier project focused on understanding system requirements, technology development, cost reduction and driver interface work**

# ***Program Goals***

- **Conduct a field operational test of a rear-end collision warning system integrated with adaptive cruise control**
- **Measure system performance**
- **Estimate real-world safety benefits**
- **Obtain information about user acceptance**

# ***Technical Team***

- **General Motors**

- Delphi Delco Electronics Systems
- Delphi Chassis Systems
- Hughes Research Laboratories (HRL)
- University of Michigan Transportation Research Institute (UMTRI)

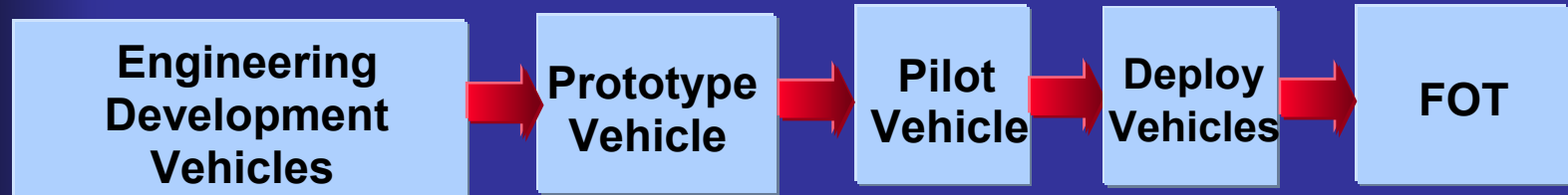
- **National Highway Traffic Safety Administration (NHTSA) - Office of Vehicle Safety Research**

- **Volpe National Transportation Systems Center**

# ***Program Overview***

- **Fifteen vehicles will be equipped with rear-end collision warning and adaptive cruise control systems**
- **Ten vehicles will be driven by volunteer drivers for one month each (100 drivers/100,000 miles driven)**
- **Extensive data collected – vehicle and subsystem digital data, video, post-test interviews and focus groups**

# ***Program Schedule***

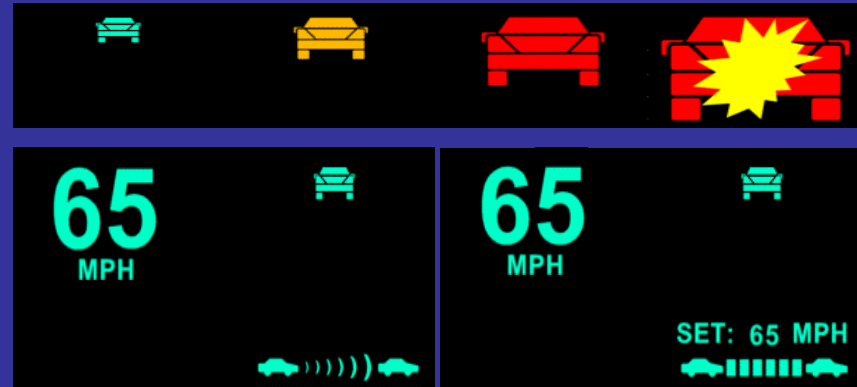


# *Vehicle Subsystems*

## Instrument Panel Monitoring

- Radio, Wipers, etc

## Collision Avoidance Processor



## GPS/Map System

## Communication Interface Bus

## Vision System

## Forward Radar Sensor

## Data Acquisition System

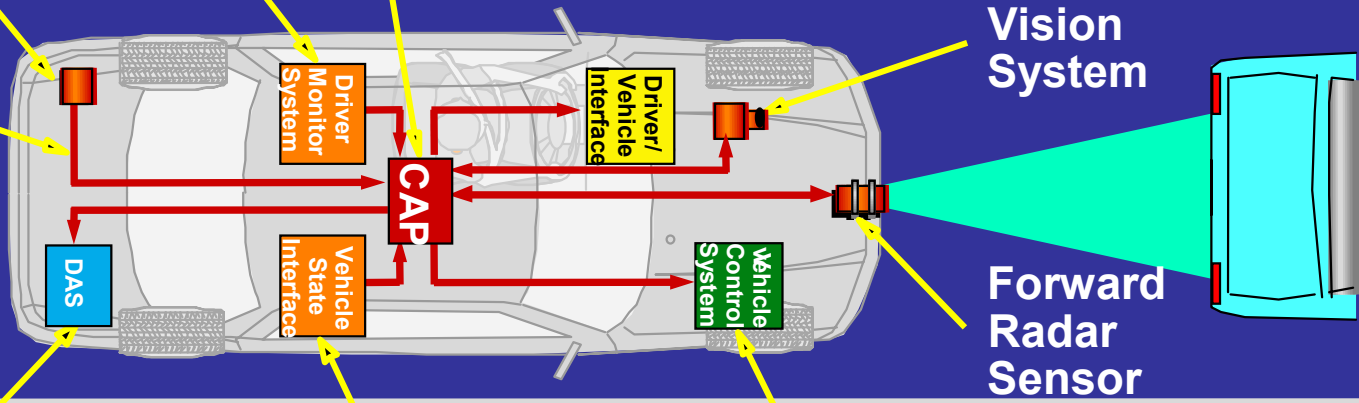
- Data-Logging
- Video System
- Cellular Phone

## Sensors

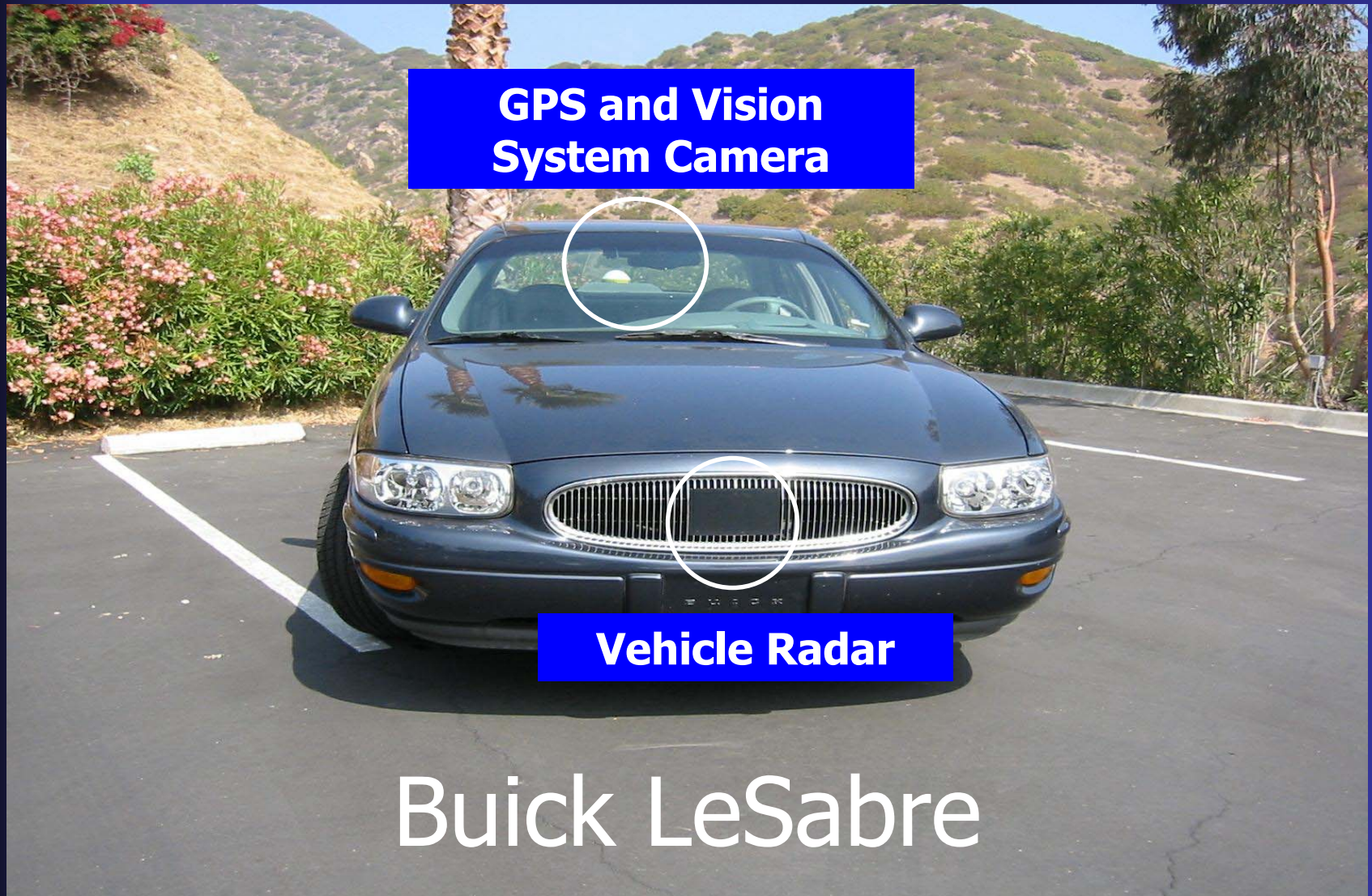
- Inertial
- Speed
- Steering

## Active Vehicle Control

- Brakes
- Throttle



# ***Prototype Vehicle***



**Buick LeSabre**

# ***Phase I Accomplishments***

- **Vehicle architecture developed and implemented**
- **Vehicle subsystems enhanced and integrated into prototype vehicle**
- **System design verified through series of prototype vehicle verification tests**
- **Groundwork for conduct of test completed**
- **First Annual Report and Phase I Interim Reports published and publicly available**

# ***Phase II - Current Status***

- **Phase II began in January 2002**
- **Anomalies uncovered in Phase I testing addressed and corrected**
- **Accompanied subject testing with prototype vehicle completed**
- **Final subsystem “tweaks” and changes nearing completion**
- **First pilot vehicle constructed and tested**
- **Parts ordered for vehicle build**

# ***Phase II - Next Steps***

- **Pilot vehicle verification tests end of July**
- **Unaccompanied subject testing in August**
- **Vehicle build will get underway in late Summer and continue through December**
- **Operational test scheduled to begin mid-December and run through October 2003**
- **Data analysis, final report preparation and final briefing (November 2003-May 2004)**

# ***Contact Information***

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## ■ **GM Program Manager:**

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## ■ **Link to Published Reports:**

- <http://www-nrd.nhtsa.dot.gov/>
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**Project Summaries**

- Crash Avoidance**
- Crashworthiness Research**
- Vehicle Research and Test Center (VRTC)**
- Statistics and Analysis**
- Biomechanics and Trauma**
- Databases and Software**
- Public Presentations**
- Enhanced Safety of Vehicles**
- Small Business Innovation Research**

Crash Avoidance Research  
Intelligent Transportation Systems  
National Advanced Driver Simulator  
Driver Distraction

Research and Development (R&D) program  
that supports the Agency's  
vehicle injuries and fatalities.

Through extensive research, development, testing,  
crash investigation, and data collection and analysis  
activities, R&D provides the scientific strength  
needed to support the Agency's motor vehicle and  
traffic safety goals.


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◆ [Program Overview](#)

General information on NHTSA's mission, goals, and organization for crash avoidance and related traffic safety research areas.

◆ [Research Areas](#)


Specific information on crash avoidance research projects and tools development.

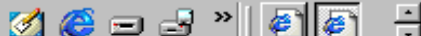

◆ [Technical Publications](#)

Bibliography of NHTSA crash avoidance research publications.

◆ [Databases](#)

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*revised: January 25, 2000*

## 2002

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- National Highway Traffic Safety Administration "[Automotive Collision Avoidance System Field Operational Test / PHASE I INTERIM REPORT](#)"
- National Highway Traffic Safety Administration "[Automotive Collision Avoidance System Field Operational Test / Warning Cue Implementation Summary Report](#)"

## 2001

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- National Highway Traffic Safety Administration / Research Note "[Crash Prevention Boundary for Road Departure Crashes---Derivation](#)" August Burgett and Kirsten Gunderson
- National Highway Traffic Safety Administration "[Evaluation of The Intelligent Cruise Control System](#)"

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## **Automotive Collision Avoidance System (ACAS) Program**

Final Report

August 2000

## **Automotive Collision Avoidance System Field Operational Test**

Phase I Interim Report

May 2002

## **Automotive Collision Avoidance System Field Operational Test**

First Annual Report

December 2000

## **Automotive Collision Avoidance System Field Operational Test**

Warning Cue Implementation Summary Report

May 2002

*These documents are available to the public  
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